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In reply, please refer to:
EMD/CWB

06006PCH.20b
DATE: June 10, 2020
NPDES PERMIT NO. HI 0020303

FACT SHEET: RENEWAL OF NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT AND ZONE OF MIXING (ZOM) TO DISCHARGE TO THE PACIFIC OCEAN, WATERS OF THE UNITED STATES

PERMITTEE: HAWAII AMERICAN WATER

FACILITY: EAST HONOLULU WASTEWATER TREATMENT PLANT

FACILITY MAILING ADDRESS
Hawaii American Water
East Honolulu Wastewater
Treatment Plant
8480 Kalanianaole Highway
Honolulu, Hawaii 96825

PERMITTEE MAILING ADDRESS
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Treatment Plant
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This Fact Sheet includes the legal requirements and technical rationale that serve as the basis for the requirements of the permit.

A. Permit Information

The Following table summarizes administrative information related to the East Honolulu Wastewater Treatment Plant (hereinafter, facility).

Table F-1. Facility Information

Permittee	Hawaii American Water
Name of Facility	East Honolulu Wastewater Treatment Plant
Facility Address	8480 Kalanianaole Highway Honolulu, Hawaii 96825
Facility Contact, Title, and Phone	Mr. Bruce Zhang Plant Superintendent (808) 396-8672
Authorized Person to Sign and Submit Reports	Mr. Bruce Zhang Plant Superintendent (808) 396-8672
Certifying Person	Mr. Lee Mansfield Manager General (808) 394-1285
Mailing Address	8480 Kalanianaole Highway Honolulu, Hawaii 96825
Billing Address	Same as above
Industrial Storm Water	Yes, covered under this permit
Pretreatment Program	No
Reclamation Requirements	No
Facility Design Flow	5.2 million gallons per day (MGD)
Receiving Waters	Outfall Serial No. 001: Pacific Ocean at Sandy Beach Outfall Serial No. 002: Pacific Ocean at Sandy Beach
Receiving Water Type	Marine
Receiving Water Classification	Class A Dry Open Coastal Waters (HAR Section 11-54-06(b)(2)(B))

NPDES Permit No. HI 0020303, including ZOM, became effective on October 30, 2014, was modified effective October 1, 2015, then later modified effective January 1, 2017, and expired on September 29, 2019. The Permittee reapplied for an NPDES permit and ZOM on March 29, 2019. The Hawaii Department of Health (hereinafter DOH) administratively extended the NPDES permit, including the ZOM, on November 19, 2019 effective September 28, 2019.

The DOH proposes to issue a permit to discharge to the waters of the State and has included in the proposed permit those terms and conditions which are necessary to carry out the provisions of the Federal Water Pollution Control Act (P.L. 92-500), Federal Clean Water Act (CWA) (P.L. 95-217) and Hawaii Revised Statutes (HRS) Chapter 342D.

B. Facility Setting

1. Facility Operation and Location

   Hawaii American Water (hereinafter Permittee) owns and operates the facility, located in Honolulu, Hawaii, on the island of Oahu. The facility has a design capacity of 5.2 MGD and provides primary and secondary treatment of wastewater for approximately 33,000 people in the Hawaii Kai and Kuliouou-Paiko communities. Treatment consists of preliminary influent screening and grit removal, three primary clarification basins, two aeration basins, two secondary clarifiers and an ultra-violet (UV) disinfection system.

   Treated effluent is discharged to the Pacific Ocean off of Sandy Beach, through Outfall Serial No. 001, at Latitude 21°17'09"N and Longitude 157°40'01"W.

   Outfall Serial No. 001 is a deep ocean outfall that discharges treated effluent through a diffuser that start approximately 1,400 feet offshore and 46 feet below the surface of the water. The diffuser is comprised of 10 ports and one port in the end cap.

   Sludge processing consists of two anaerobic digesters, a gravity belt thickener, and a belt filter press. Solids are primarily disposed of at the H-POWER (Covanta Honolulu Resource Recovery Venture) facility.

   Storm water from the facility is discharged to the Pacific Ocean off of Sandy Beach, through Outfall Serial No. 002, at Latitude 21°17'09"N and Longitude 157°40'19"W.

   Figure 1 of the permit provides a map showing the location of the facility. Figure 2 of the permit provides a map of the ZOM and receiving water monitoring station locations.

2. Receiving Water Classification

   The Pacific Ocean off of Sandy Beach, is designated as "Class A Dry Open Coastal Waters" under Hawaii Administrative Rules (HAR) Section 11-54-06(b)(2)(B). Protected beneficial uses of Class A waters include recreation, aesthetic enjoyment, and the protection and propagation of fish, shellfish, and wildlife.

3. Ocean Discharge Criteria

   The Director has considered the Ocean Discharge Criteria, established pursuant to Section 403(c) of the CWA for the discharge of pollutants into the territorial sea, the waters of the contiguous zone, or the oceans. The United

States Environmental Protection Agency (EPA) has promulgated regulations for Ocean Discharge Criteria in 40 Code of Federal Regulations (CFR) Part 125, Subpart M. The Director has determined that the discharge will not cause unreasonable degradation to the marine environment. Based on the current information, the Director proposes to issue a permit.

4. Impaired Water Bodies on CWA 303(d) List

   CWA section 303(d) requires States to identify specific water bodies where water quality standards (WQSs) are not expected to be met after implementation of technology-based effluent limitations on point sources.

   On August 16, 2018, the U.S. Environmental Protection Agency (EPA) approved the 2018 State of Hawaii Water Quality Monitoring and Assessment Report, which includes the 2018 303(d) List of Impaired Water Bodies in the State of Hawaii.

   The Pacific Ocean off of Sandy Beach is listed in the 2018 303(d) list as impaired for total nitrogen, nitrate + nitrite nitrogen, ammonia nitrogen, turbidity, and chlorophyll a. At present, no Total Maximum Daily Limits (TMDLs) have been established for this waterbody, and the 2018 303(d) list identified it as having a low priority for initiating TMDL development within the current monitoring and assessment cycle, based on current and projected resource availability for completing the TMDL development process.

5. Summary of Existing Effluent Limitations

   a. Existing Effluent Limitations and Monitoring Data

      Effluent limitations contained in the previous permit for discharges from Outfall Serial No. 001 and representative monitoring data from November 2014 through December 2018, are presented in the following tables.

Table F-2a. Historic Effluent Limitations and Monitoring Data – Outfall Serial No. 001

Parameter	Units	Effluent Limitation			Reported Data[1]		
		Average Monthly	Average Weekly	Maximum Daily	Average Monthly	Average Weekly	Maximum Daily
Flow	MGD	[2]	[2]	[2]	4.723	5.979	15.38
Biochemical Oxygen Demand (BOD 5-Day)	mg/L	30	45	90	7.7	18.4	88.4
	lbs/day[7]	976	1,464	2,927	327	875	4,499.5
	% Removal	The average monthly percent removal shall not be less than 85 percent			89.10[3]		
Total Suspended Solids (TSS)	mg/L	30	45	90	11.1	29.5	182.8
	lbs/day[7]	976	1,464	2,927	497	1,447	9,304.3
	% Removal	The average monthly percent removal shall not be less than 85			83.97[3]		

Parameter	Units	Effluent Limitation			Reported Data[1]		
		Average Monthly	Average Weekly	Maximum Daily	Average Monthly	Average Weekly	Maximum Daily
		percent					
pH	Standard Units	Not less than 6.0 nor greater than 9.0			6.0 – 7.9		
Oil and Grease	mg/L	--	--	[2]	--	--	5.1
	lbs/day	--	--	[2]	--	--	160
Cyanide, Total (as CN)	µg/L	--	--	50	--	--	120
	lbs/day[8]	--	--	2.2	--	--	4
Enterococci	CFU/ 100 mL	175[4]	--	5,200[5]	25	--	>200
Temperature	°C	--	--	[2]	--	--	30.9
Turbidity	NTU	--	--	[2]	--	--	24.7
Chronic Toxicity – *Tripneustes Gratilla*	Pass/Fail	--	--	Pass	--	--	Pass[6]

MGD – Million Gallons per Day
NTU – Nephelometric Turbidity Unit

1 Source: Monthly Discharge Monitoring Report (DMRs) submitted by the Permittee from November 2014 to December 2018.
Represents highest reported value over the monitoring period specified.
2 No effluent limitations for this pollutant in the previous permit, only monitoring required.
3 Represents the minimum reported percent removal.
4 Geometric mean.
5 Single sample maximum.
6 Source: Wastewater Pollution Prevention Annual Reports from 2014 to 2018. Chronic toxicity tests conducted semi-annually (twice a year), with all results reported as "Pass."
7 Mass-based effluent limits calculated using a design flow rate of 3.9 MGD.
8 Mass-based effluent limits calculated using a design flow rate of 5.2 MGD.

Table F-2b. Historic Effluent Limitations and Monitoring Data – Outfall Serial No. 001

Parameter	Units	Effluent Limitation		Reported Data[1]	
		Geometric Mean[2]	Single Sample Maximum	Geometric Mean[2]	Single Sample Maximum
Ammonia Nitrogen	µg/L	--	6,660	--	5,771
	lbs/day[4]	--	289	--	209
Nitrate + Nitrite Nitrogen	µg/L	--	10,300	--	10,550
	lbs/day[4]	--	447	--	311
Total Nitrogen	µg/L	--	13,100	--	12,452
	lbs/day[4]	--	568	--	479
Total Phosphorous	µg/L	--	[3]	--	1061
	lbs/day[4]	--	[3]	--	34

1 Source: Monthly DMR's submitted by the Permittee from November 2014 to December 2018.
Represents highest reported value over the monitoring period specified.
2 To be evaluated on a calendar year.
3 No effluent limitations in the previous permit, only monitoring required.
4 Mass-based effluent limits calculated using a design flow rate of 5.2 MGD.

There were no discharges of industrial storm water from Outfall Serial No. 002 reported during this permit term.

6. Compliance Summary

The following table lists effluent limitation violations as identified in the monthly, quarterly, and annual DMRs submitted by the Permittee from November 2014 through December 2018.

Table F-3. Summary of Compliance History

Outfall Serial No.	Monitoring Period	Violation Type	Pollutant	Reported Value	Permit Limitation	Units
001	March 2015	Daily Max	No_2 + No_3 as N	10,550	10,300	µg/L
001	August 2015	Daily Max	Chlorine	0	0.375	mg/L
001	September 2015	Daily Max	BOD, 5-day	4,499.5	2,927	lbs/day
001	September 2015	Daily Max	TSS	9,304.3	2,927	lbs/day
001	September 2015	Daily Max	TSS	182.8	90	mg/L
001	September 2015	Monthly Average	TSS	83.97	85	% removal
001	February 2017	Daily Max	TSS	7,750.3	2,927	lbs/day
001	February 2017	Daily Max	TSS	146	90	mg/L
001	February 2017	Monthly Average	TSS	84.77	85	% removal
001	July 2017	Daily Max	Cyanide as CN	3	2.2	lbs/day
001	July 2017	Daily Max	Cyanide as CN	80	50	µg/L
001	March 2018	Daily Max	Cyanide as CN	80	50	µg/L
001	April 2018	Daily Max	Cyanide as CN	4	2.2	lbs/day
001	April 2018	Daily Max	Cyanide as CN	120	50	µg/L
001	May 2018	Daily Max	Cyanide as CN	3.4	2.2	lbs/day
001	May 2018	Daily Max	Cyanide as CN	120	50	µg/L
001	June 2018	Daily Max	Cyanide as CN	68	50	µg/L

7. Planned Changes

There were no planned changes during the term of the current permit.

C. Applicable Plans, Policies, and Regulations

1. Hawaii Administrative Rules Chapter 11-54

   On November 12, 1982, the Hawaii Administrative Rules Title 11, Department of Health, Chapter 54 became effective (hereinafter HAR Chapter 11-54). HAR Chapter 11-54 was amended and compiled on October 6, 1984; April 14, 1988; January 18, 1990; October 29, 1992; April 17, 2000; October 2, 2004; June 15, 2009; October 21, 2012; December 6, 2013; and the most recent amendment was on November 15, 2014. HAR Chapter 11-54 establishes beneficial uses and classifications of State waters, the State antidegradation policy, zones of mixing standards, and water quality criteria that are applicable to the Pacific Ocean off of Sandy Beach.

   Requirements of the permit implement HAR Chapter 11-54.

2. Hawaii Administrative Rules Chapter 11-55

   On November 27, 1981 HAR Title 11, Department of Health, Chapter 55 became effective (hereinafter HAR Chapter 11-55). HAR Chapter 11-55 was amended and compiled on October 29, 1992; September 22, 1997; January 6, 2001; November 7, 2002; August 1, 2005; October 22, 2007; June 15, 2009; October 21, 2012; December 6, 2013; July 13, 2018; and the most recent amendment was on February 9, 2019. HAR Chapter 11-55 establishes standard permit conditions and requirements for NPDES permits issued in Hawaii.

   Requirements of the permit implement HAR Chapter 11-55.

3. State Toxics Control Program

   NPDES Regulations at 40 CFR 122.44(d) require permits to include water quality-based effluent limitations (WQBELs) for pollutants, including toxicity, that are or may be discharged at levels that cause, have reasonable potential to cause, or contribute to an exceedance of a WQS. The *State Toxics Control Program: Derivation of Water Quality-Based Discharge Toxicity Limits for Biomonitoring and Specific Pollutants* (hereinafter, STCP) was finalized in April 1989, and provides guidance for the development of water quality-based toxicity control in NPDES permits by developing the procedures for translating WQSs in HAR Chapter 11-54, into enforceable NPDES permit limitations. The STCP identifies procedures for calculating permit limitations for specific toxic pollutants for the protection of aquatic life and human health.

4. Hawaii Implementation Plan for Toxic Pollutants and Nutrients

   The Hawaii Implementation Plan for Toxic Pollutants and Nutrients in National Pollutant Discharge Elimination System Permit Process (HIP) is a draft DOH document that establishes procedures for DOH staff in the implementation of the water quality standards and procedures found in HAR Chapters 11-54 and 11-55 related to the NPDES permit process.

   Guidance contained in the HIP was used to determine effluent limitations in the permit.

5. 40 CFR Part 133 – Secondary Treatment Regulation

   40 CFR Part 133 provides technology-based regulations and effluent limitations applicable to facilities that provide secondary treatment of wastewater.

D. Rationale for Effluent Limitations and Discharge Specifications

The CWA requires point source dischargers to control the amount of conventional, non-conventional, and toxic pollutants that are discharged into the waters of the United States. The control of pollutants discharged is established through effluent limitations and other requirements in NPDES permits. NPDES regulations establish two (2) principal bases for effluent limitations. At 40 CFR 122.44(a), permits are required to include applicable technology-based limitations and standards; and at 40 CFR 122.44(d), permits are required to include WQBELs to attain and maintain applicable numeric and narrative water quality criteria to protect the beneficial uses of the receiving water. When numeric water quality objectives have not been established, but a discharge has the reasonable potential to cause or contribute to an excursion above a narrative criterion, WQBELs may be established using one (1) or more of three (3) methods described at 40 CFR 122.44(d) - 1) WQBELS may be established using a calculated water quality criterion derived from a proposed State criterion or an explicit state policy or regulation interpreting its narrative criterion; 2) WQBELs may be established on a case-by-case basis using EPA criteria guidance published under CWA Section 304(a); or 3) WQBELs may be established using an indicator parameter for the pollutant of concern.

1. Technology-Based Effluent Limitations

   a. Scope and Authority

      Section 301(b) of the CWA and implementing EPA permit regulations at 40 CFR 122.44 require that permits include conditions meeting applicable technology-based requirements at a minimum, and any more stringent effluent limitations necessary to meet applicable WQSs. The discharge

authorized by this permit must meet minimum federal technology-based requirements based in accordance with 40 CFR 125.3.

Regulations promulgated in 40 CFR 125.3(a)(1) require technology-based effluent limitations for municipal dischargers to be placed in NPDES permits based on Secondary Treatment Standards or Equivalent to Secondary Treatment Standards.

The Federal Water Pollution Control Act Amendments of 1972 (PL 92-500) established the minimum performance requirements for publicly owned treatment works (POTWs) [defined in section 304(d)(1)]. CWA Section 301(b)(1)(B) requires that such treatment works must, at a minimum, meet effluent limitations based on secondary treatment as defined by the EPA Administrator.

Based on this statutory requirement, EPA developed secondary treatment regulations, which are specified in 40 CFR 133. These technology-based regulations apply to all municipal wastewater treatment plants and identify the minimum level of effluent quality attainable by secondary treatment in terms of 5-day biochemical oxygen demand (BOD_5), total suspended solids (TSS), and pH.

40 CFR 403.3 defines a POTW as a treatment works that is owned by a State or municipality. Since the facility is privately-owned, it does not meet the definition of a POTW. Consequently, the secondary treatment standards at 40 CFR Part 133 are not directly applicable to the facility. However, since the wastewater characteristics and processes employed are similar to those of a POTW, this permit includes technology-based effluent limitations based on the secondary treatment standards in 40 CFR Part 133.

b. Applicable Technology-Based Effluent Limitations

At 40 CFR 133 in the Secondary Treatment Regulations, EPA has established the minimum required weekly and monthly average level of effluent quality attainable by secondary treatment shown in Table F-4 below. In addition to weekly and monthly average effluent limitations, the previous permit established a maximum daily effluent limitation of 90 mg/L, which is retained in this permit based on State and federal anti-backsliding requirements. The standards in Table F-4 are applicable to the facility and therefore established in the permit as technology-based effluent limitations.

Table F-4. Applicable Technology Based Effluent Limitations

Parameter	Units	30-Day Average	7-Day Average	Maximum Daily
BOD_5[1]	mg/L	30	45	90
TSS[1]	mg/L	30	45	90
pH	standard units	6.0 – 9.0		

[1] The 30-day average percent removal shall not be less than 85 percent.

2. Water Quality-Based Effluent Limitations (WQBELs)

a. Scope and Authority

NPDES regulations at 40 CFR 122.44(d) require permits to include WQBELs for pollutants, including toxicity, that are or may be discharged at levels that cause, have reasonable potential to cause, or contribute to an exceedance of a WQS, including numeric and narrative objectives within a standard (reasonable potential). As specified in 40 CFR 122.44(d)(1)(i), permits are required to include WQBELs for all pollutants "which the Director determines are or may be discharged at a level that will cause, have reasonable potential to cause, or contribute to an excursion above any State water quality standard."

The process for determining reasonable potential and calculating WQBELs, when necessary, is intended to protect the receiving waters as specified in HAR Chapter 11-54. When WQBELs are necessary to protect the receiving waters, the DOH has followed the requirements of HAR Chapter 11-54, the STCP, the HIP, and other applicable State and federal guidance policies to determine WQBELs in the permit.

Where reasonable potential has been established for a pollutant, but there is no numeric criterion or objective for the pollutant, WQBELs must be established in accordance with the requirements of 40 CFR 122.44(d)(1)(vi), using (1) EPA criteria guidance under CWA Section 304(a), supplemented where necessary by other relevant information; (2) an indicator parameter for the pollutant of concern; or (3) a calculated numeric water quality criterion, such as a proposed State criterion or policy interpreting the State's narrative criterion, supplemented with other relevant information.

b. Applicable Water Quality Standards

The beneficial uses and WQSs that apply to the receiving waters for this discharge are from HAR Chapter 11-54.

(1) **HAR Chapter 11-54.** HAR Chapter 11-54 specifies numeric aquatic life standards for 72 toxic pollutants and human health standards for 60 toxic pollutants, as well as narrative standards for toxicity. Effluent

limitations and provisions in the permit are based on available information to implement these standards.

(2) **Water Quality Standards.** The facility discharges to the Pacific Ocean off of Sandy Beach which is classified as a marine Class A Dry Open Coastal Waters in HAR Chapter 11-54. As specified in HAR Chapter 11-54, saltwater standards apply when the dissolved inorganic ion concentration is above 0.5 parts per thousand. As such, a reasonable potential analysis (RPA) was conducted using saltwater standards. Additionally, human health WQSs were also used in the RPA to protect human health. Where both saltwater standards and human health standards are available for a particular pollutant, the more stringent of the two will be used in the RPA.

40 CFR 122.45(c) requires effluent limitations for metals to be expressed as total recoverable metal. Since WQSs for metals are expressed in the dissolved form in HAR Chapter 11-54, factors or translators must be used to convert metal concentrations from dissolved to total recoverable. Default EPA conversion factors were used to convert the applicable dissolved criteria to total recoverable.

(3) **Receiving Water Hardness.** HAR Chapter 11-54, contains water quality criteria for six (6) metals that vary as a function of hardness in freshwater. A lower hardness will result in a lower freshwater WQS. The metals with hardness dependent standards include cadmium, copper, lead, nickel, silver, and zinc. Ambient hardness values are used to calculate freshwater WQSs that are hardness dependent. Since saltwater standards are used for the RPA, the receiving water hardness was not taken into consideration when determining reasonable potential.

c. Determining the Need for WQBELs

NPDES regulations at 40 CFR 122.44(d) require effluent limitations to control all pollutants which are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any State WQS. Assessing whether a pollutant has reasonable potential is the fundamental step in determining whether or not a WQBEL is required. Using the methods prescribed in the HIP, the effluent data from Outfall Serial No. 001 were analyzed to determine if the discharge demonstrates reasonable potential. The RPA compared the effluent data with numeric and narrative WQSs in HAR Chapter 11-54-4. To determine reasonable potential for nutrients contained in HAR Chapter 11-54-6, a direct comparison of the receiving water concentrations at the edge of the ZOM was compared to the most stringent WQS.

(1) **Reasonable Potential Analysis (RPA).** The RPA for pollutants with WQS specified in HAR Chapter 11-54-4, based on EPA's Technical Support Document (TSD), combines knowledge of effluent variability as estimated by a coefficient of variation with the uncertainty due to a limited number of data to project an estimated maximum receiving water concentration as a result of the effluent. The estimated receiving water concentration is calculated as the upper bound of the expected lognormal distribution of effluent concentrations at a high confidence level. The projected maximum receiving water concentration, after consideration of dilution, is then compared to the WQS in HAR Chapter 11-54, to determine if the pollutant has reasonable potential. The projected maximum receiving water concentration has reasonable potential if it cannot be demonstrated with a high confidence level that the upper bound of the lognormal distribution of effluent concentrations is below the receiving water standards.

Because the most stringent WQS for pollutants specified in HAR Chapter 11-54-6, are provided as geometric means and exceedances of these WQS are less sensitive to effluent variability, the RPA for pollutants in HAR Chapter 11-54-6, was conducted by doing a direct comparison of the maximum effluent concentration to the most stringent applicable WQS after consideration of dilution, where applicable.

(2) **Effluent Data.** The RPA for all parameters was based on effluent monitoring data submitted to the DOH in DMRs from November 2014 to December 2018.

(3) **Dilution.** The STCP discusses dilution, defined as the reduction in the concentration of a pollutant or discharge which results from mixing with the receiving waters, for submerged and high-rate outfalls. The STCP states that minimum dilution is used for establishing effluent limitations based on chronic criteria and human health standards for non-carcinogens, and average conditions are used for establishing effluent limitations based on human health standards for carcinogens.

The previous permit included a dilution of 50:1 (seawater:effluent) for effluent limitations. The dilution used was based on the results of a 1990 Hawaii Kai Sewage Outfall analysis (hereinafter Study) using EPA's mathematical model, UMERGE. In the Study, the Permittee determined the critical minimum initial dilution to be 50:1. EPA's *Initial Mixing Characteristic of Municipal Ocean Discharges* indicates that "worst-case" conditions be evaluated using a combination of conservative values for conditions affecting initial dilution. Although no average dilution was provided was provided, using a minimum critical initial dilution of 50:1 for calculating effluent limitations for human health standards for carcinogens is more conservative than an average

dilution and will still be protective of water quality. Therefore, because only a critical minimum initial dilution was used in the previous permit and a new dilution study for initial dilution has not been conducted, the DOH has determined the critical short-term initial dilution of 50:1 is still protective of water quality for chronic and fish consumption criteria for non-carcinogens, and fish consumption criteria for carcinogens.

HAR Chapter 11-54-9 allows the use of a ZOM to demonstrate compliance with WQS. ZOMs consider initial dilution, dispersion, and reactions from substances which may be considered to be pollutants. However, due to other potential sources of pollutants into the receiving water, such as storm water runoff or unidentified discharges, it is often problematic to determine the cause of WQS exceedances in the receiving water at the edge of a ZOM. It is more practical to determine the available dilution provided in the ZOM and apply that dilution to the WQS to calculate an effluent limitation that can be applied end-of-pipe.

The Permittee conducted a dilution study during this previous permit term to determine the average dilution at the edge of the ZOM. The Permittee used a computer model that dynamically coupled a near-field and far-field model. The dilution study found that under the most conservative conditions, the average dilution at the edge of the ZOM is estimated to be 2,480:1 (seawater:effluent). For Section 11-54-6(b)(3) parameters, reasonable potential to contribute to an exceedance of WQS is most reasonably assessed by comparing monitoring data at the edge of the ZOM to the applicable WQS.

Where reasonable potential has been determined for Section 11-54-6(b)(3) pollutants, limitations must be established that are protective of water quality. Since the dilution at the edge of the ZOM is known, where assimilative capacity exists, this permit establishes limitations for Section 11-54-6(b)(3) pollutants as effluent limitations based on dilution. Where assimilative capacity does not exist, it is not appropriate to grant a ZOM and/or dilution, and an end-of-pipe criteria-based effluent limitation must be established that is protective of WQS.

Assimilative capacity for pollutants with reasonable potential is evaluated for HAR Section 11-54-6(b)(3) pollutants by aggregating all ZOM control station data annually and comparing the annual geometric means to the applicable WQS. The Permittee was required to perform a dilution study in the previous permit term, which included determining assimilative capacity for nitrate + nitrite nitrogen, ammonia nitrogen, and total nitrogen. Table F-5 below contains the annual geometric means from the ZOM control stations from 2013-2017, provided by the Permittee in the submitted ZID/ZOM Form. Annual geometric means for 2018 were added to this table based on ZOM receiving water data received by the Clean Water Branch for the 2018 year.

Table F-5. Annual Geometric Means at Control Stations

Year	$NO_3^- + NO_2^-$	NH_4^+	TN
	(µg/L)	(µg/L)	(µg/L)
2013	0.81	1.13	102.10
2014	0.91	2.06	95.66
2015	0.60	2.20	95.01
2016	0.57	1.60	96.63
2017	0.90	1.21	88.04
2018	0.49	1.19	94.01
WQS	**3.5**	**2.0**	**110.0**
90% WQS	**3.15**	**1.8**	**99.0**

Following the guidance outlined in the HIP, nitrate + nitrite nitrogen is shown to have assimilative capacity, as none of the annual geomeans at the control stations exceed 90% of the applicable WQS. Since at least one annual geomean exceeded the applicable WQS for ammonia nitrogen and total nitrogen, an additional assessment is required. The HIP states that if the previous 12 months of receiving water data indicate compliance with water quality criteria, and the background concentrations of the pollutant are decreasing over time, assimilative capacity exists within the receiving water. For ammonia nitrogen, the annual geomean has been decreasing since 2015, and the most recent annual geomean in 2018 is well below the 90% value of the WQS. For total nitrogen, the annual geomean value is generally trending down from the highest value in 2013, and the most recent annual geomean in 2018 is below the 90 percent value of the WQS. Therefore, based on the data and assessments outlined in the HIP, there is assimilative capacity for nitrate + nitrite nitrogen, ammonia nitrogen, and total nitrogen.

(4) **Summary of RPA Results.** The maximum effluent concentrations from the DMRs over the previous permit term, maximum projected receiving water concentration after dilution calculated using methods from the HIP, the applicable HAR Section 11-54-4(b)(3) and 11-54-6(b)(3) WQS, and result of the RPA for pollutants discharged from Outfall Serial No. 001, are presented in Table F-6 below. Only

pollutants detected in the discharge are presented in Table F-6. All other pollutants were not detected and therefore, no reasonable potential exists. The RPA was conducted using monitoring data submitted to the DOH covering November 2014 to December 2018.

Table F-6. Summary of RPA Results

Parameter	Units	Maximum Effluent Concentration	Number of Effluent Samples	Maximum Projected Concentration	Applicable WQS	RPA Results
Cyanide, Total Recoverable	µg/L	120	54	7.08	1	Yes
Arsenic, Total Recoverable	µg/L	13	4	1.2	36	No
Beryllium, Total Recoverable	µg/L	3	4	0.06	0.038	Yes
Copper, Total Recoverable	µg/L	45	4	4.15	3.49[2]	Yes
Lead, Total Recoverable	µg/L	19	4	1.75	5.89[2]	No
Thallium, Total Recoverable	µg/L	62	4	5.71	16	No
Nickel, Total Recoverable	µg/L	22	4	2.03	8.38[2]	No
Silver, Total Recoverable	µg/L	5	4	0.46	2.70[2]	No
Zinc, Total Recoverable	µg/L	19	4	1.75	90.9[2]	No
Selenium, Total Recoverable	µg/L	44	4	4.05	71.14[2]	No
Ammonia Nitrogen	µg/L	2.47[1]	N/A	N/A	2	Yes
Total Nitrogen	µg/L	97.34[1]	N/A	N/A	110	No
Total Phosphorous	µg/L	12.15[1]	N/A	N/A	16	No
Nitrate + Nitrite Nitrogen	µg/L	1.32[1]	N/A	N/A	3.5	No

[1] Maximum annual geometric mean at the edge of the ZOM (i.e., Stations 1, 2, 3, 4, 7, and 8).
[2] Total dissolved WQS expressed as total recoverable using EPA translator.

(5) **Reasonable Potential Determination**

(a) **Constituents with limited data.** In some cases, reasonable potential cannot be determined because effluent data are limited. The permit requires the Permittee to continue to monitor for these constituents in the effluent using analytical methods that provide the lowest available detection limitations. When additional data become available, further RPAs will be conducted to determine whether to add numeric effluent limitations to this permit or to continue monitoring.

Data for the following parameters was not available:

- Aluminum
- Chlorine
- Chlorpyrifos
- Demeton
- Guthion
- Hexachlorocyclohexane-technical
- Malathion
- Parathion
- Pentachloroethane
- Bis (2-chloroisopropyl) ether
- Pentachlorobenzene
- 1,2,4,5 – Tetrachlorobenzene
- 2,3,5,6 – Tetrachlorophenol
- Tributyltin

(b) **Pollutants with No Reasonable Potential.** WQBELs are not included in this permit for constituents listed in HAR Chapter 11-54-4(3) and 11-54-6(b)(3), that do not demonstrate reasonable potential; however, monitoring for such pollutants is still required in order to collect data for future RPAs. Pollutants with no reasonable potential consist of those identified in Table F-6 or any pollutant not discussed in Parts D.2.c.(5).(a) or D.2.c.(5).(c) of this Fact Sheet.

(c) **Pollutants with Reasonable Potential.** The RPA indicated that cyanide, beryllium, copper, and ammonia nitrogen have reasonable potential to cause or contribute to an excursion above State WQSs. Further, due to the nature of the discharge (secondary treated wastewater), pathogens such as enterococcus are present in the effluent. Due to this, reasonable potential for enterococcus has been determined due to the nature of the facility and discharge.

Thus, WQBELs have been established in this permit at Outfall Serial No. 001 for cyanide, beryllium, copper, enterococcus, and pH.

The WQBELs were calculated based on WQSs contained in HAR Chapter 11-54, and procedures contained in both STCP, HIP, and HAR Chapter 11-54, as discussed in Part D.2.d below.

d. WQBEL Calculations

Specific pollutant limits may be calculated for both the protection of aquatic life and human health.

(1) **WQBELs based on Aquatic Life Standards.** The HIP and STCP categorize a discharge from a facility into one of four categories:

(1) marine discharges through submerged outfalls; (2) discharges without submerged outfalls; (3) discharges to streams; or (4) high-rate discharges. Once a discharge has been categorized, effluent limitations for pollutants with reasonable potential can be calculated, as described below.

(a) For marine discharges through submerged outfalls, the daily maximum effluent limitation shall be the product of the chronic WQS and the minimum dilution factor;

(b) For discharges without submerged outfalls, the daily maximum effluent limitation shall be the acute toxicity standard;

(c) For discharges to streams, the effluent limitation shall be the most stringent of the acute standard and the product of the chronic standard and dilution; and

(d) For high rate outfalls, the maximum limit for a particular pollutant is equal to the product of the acute standard and the acute dilution factor determined according to Section II.B.4 of the STCP.

(2) **WQBELs based on Human Health Standards.** The STCP specifies that the fish consumption standards are based upon the bioaccumulation of toxics in aquatic organisms followed by consumption by humans. Limits based on the fish consumption standards should be applied as 30-day averages for non-carcinogens and annual averages for carcinogens.

The discharge from this facility is considered a marine discharge through a submerged outfall. Therefore, for pollutants with reasonable potential, the permit establishes, on a pollutant-by-pollutant basis, daily maximum effluent limitations based on saltwater chronic aquatic life standard after considering dilution and average monthly effluent limitations for non-carcinogens or annual average effluent limitations for carcinogens based on the human health standard after considering dilution. WQBELs established in the permit are discussed in detail below.

(3) **Calculation of Pollutant-Specific WQBELs**

As discussed in Part D.2.c.(3) of this Fact Sheet, a dilution of 50:1 has been established.

The following equation was used to calculate reasonable potential for all toxic pollutants except beryllium.

Projected Maximum RWC = (Multiplier x X_{Max}) / (1 + D)

Where:

RWC	=	Receiving water concentration
Multiplier	=	Reasonable potential multiplier based on the CV (Coefficient of Variation) and the number of samples (n)
X_{Max}	=	Highest observed pollutant concentration (µg/L)
D	=	Parts receiving water to effluent

Due to beryllium being a carcinogen, the following equation was used to calculate reasonable potential.

Projected Maximum RWC = X_{Max} / (1 + D)

Where:

RWC	=	Receiving water concentration
X_{Max}	=	Highest observed annual average pollutant concentration (µg/L)
D	=	Parts receiving water to effluent

If the projected maximum receiving water concentration is greater than the applicable WQS from HAR Chapter 11-54, the reasonable potential exists for the pollutant and effluent limitations are established. Pollutants with reasonable potential are discussed below in detail.

(a) **Cyanide**

i. **Cyanide Water Quality Standards.** The most stringent applicable WQSs for cyanide are the acute and chronic saltwater standards of 1 µg/L, as specified in HAR Chapter 11-54. There are no fish consumption standards for cyanide.

ii. **RPA Results.** The Permittee reported 54 data points for cyanide (n = 54), resulting in a CV = 1.75. Based on a CV of 1.75 and 54 samples, the 99% multiplier calculated using methods described in the HIP was 3.01. As discussed in Part D.2.c.(3), the facility is granted a dilution of 50:1.

The maximum effluent concentration for cyanide was 120 µg/L.

Projected Maximum RWC	=	(Multiplier x X_{Max}) / (1 + D)
	=	(3.01 x 120 µg/L) / (1 + 50)
	=	7.08 µg/L
HAR 11-54 WQS	=	1 µg/L

The projected maximum receiving water concentration (7.08 µg/L) exceeds the most stringent applicable WQS for this pollutant (1 µg/L), demonstrating reasonable potential. Therefore, the permit establishes effluent limitations for cyanide.

iii. **Cyanide WQBELs.** WQBELs for cyanide are calculated using HIP procedures and are based on the chronic saltwater aquatic life WQS. The permit establishes a daily maximum effluent limitation for cyanide of 50 µg/L based on the chronic saltwater aquatic life WQS and a dilution of 50:1.

There are no fish consumption standards for cyanide; therefore, a monthly average effluent limitation for cyanide is not included in the permit.

iv. **Feasibility.** The maximum effluent concentration reported for cyanide during the term of the previous permit was 120 µg/L. During the permit term, the Permittee's original contract lab was found to be detecting erroneous cyanide data and a new lab was contracted for cyanide testing in July 2018. Since switching to the new lab, no exceedances of the cyanide limitation were reported. Based on this, despite the maximum effluent concentration during the previous permit term being higher than the proposed maximum effluent daily limitation of 50 µg/L, the DOH has determined that the facility will be able to comply with the proposed limitation.

v. **Anti-backsliding.** Anti-backsliding regulations are satisfied, because the proposed cyanide effluent limitations are retained from the previous permit, thus these limitations are at least as stringent as the previous permit.

(b) **Beryllium**

i. **Beryllium Water Quality Standards.** The most stringent applicable WQS for beryllium is the fish consumption standard of 0.038 µg/L, as specified in HAR Chapter 11-54. There are no saltwater standards for beryllium.

ii. **RPA Results.** The Permittee reported four data points for beryllium. Since beryllium is classified as a carcinogen, annual averages are used in the RPA. As discussed in Part D.2.c.(3), the facility is granted a dilution of 50:1.

The maximum annual average effluent concentration for beryllium was 3 µg/L.

Projected Maximum RWC = X_{Max} / (1 + D)
= 3 µg/L / (1 + 50)
= 0.059 µg/L
HAR 11-54 WQS = 0.038 µg/L

The projected maximum receiving water concentration (0.059 µg/L) exceeds the most stringent applicable WQS for beryllium (0.038 µg/L), demonstrating reasonable potential. Therefore, the permit establishes effluent limitations for beryllium.

iii. **Beryllium WQBELs.** WQBELs for beryllium are calculated using HIP procedures and are based on the human health WQS. The permit establishes an annual average limitation of 1.9 µg/L for beryllium based on the human health WQS and a dilution of 50:1.

There are no chronic criteria for beryllium; therefore, a daily maximum effluent limitation for beryllium is not included in the permit.

iv. **Feasibility.** The maximum effluent concentration reported for beryllium during the previous permit term was 3 µg/L. While the maximum effluent concentration is higher than the proposed effluent limitation of 1.9 µg/L, beryllium was only detected once across 4 priority pollutant scans (annually from 2015 to 2018) in 2015. The priority pollutant scans from 2016 to 2018 did not detect beryllium in the effluent. Based on this, the DOH has determined that the facility will be able to comply with the proposed annual average beryllium effluent limitation.

v. **Anti-backsliding.** Anti-backsliding regulations are satisfied because the proposed effluent limitations were not established in the previous permit for beryllium, thus these limitations are at least as stringent as the previous permit.

(c) **Copper**

i. **Copper Water Quality Standards.** The most stringent applicable WQSs for copper are the acute and chronic saltwater standards of 2.9 µg/L dissolved fraction (3.49 µg/L, total

recoverable after using EPA's translator), as specified in HAR Chapter 11-54. There are no fish consumption standards for copper.

ii. **RPA Results.** The Permittee reported four data points for copper (n = 4), resulting in a CV = 0.6. Based on a CV of 0.6 and four samples, the 99% multiplier calculated using methods described in the HIP was 4.7. As discussed in Part D.2.c.(3), the facility is granted a dilution of 50:1.

The maximum effluent concentration for copper was 45 µg/L.

Projected Maximum RWC = (Multiplier x X_{Max}) / (1 + D)
= (4.7 x 45 µg/L) / (1 + 50)
= 4.15 µg/L

HAR 11-54 WQS = 3.49 µg/L (total recoverable)

The projected maximum receiving water concentration (4.15 µg/L) exceeds the most stringent applicable WQS for copper (3.49 µg/L, total recoverable), demonstrating reasonable potential. Therefore, the permit establishes effluent limitations for copper.

iii. **Copper WQBELs.** WQBELs for copper are calculated using HIP procedures and are based on the acute and chronic saltwater aquatic life WQS. The permit establishes a daily maximum effluent limitation for copper of 174.7 µg/L based on the acute and chronic saltwater aquatic life WQS and a dilution of 50:1.

There are no fish consumption standards for copper; therefore, a monthly average effluent limitation for copper is not included in the permit.

iv. **Feasibility.** The maximum effluent concentration reported for copper during the term of the previous permit was 45 µg/L. Since the maximum effluent concentration is less than the proposed maximum daily effluent limitation of 174.6 µg/L, the DOH has determined that the facility will be able to comply with proposed maximum daily copper effluent limitations.

v. **Anti-backsliding.** Anti-backsliding regulations are satisfied because the proposed copper limitations were not established in the previous permit for copper, thus these limitations are at least as stringent as the previous permit.

e. Ammonia Nitrogen

HAR Chapter 11-54-6 establishes the following WQS for ammonia nitrogen:

Parameter	Geometric Mean	Value not to exceed more than 10% of the time	Value not to exceed more than 2% of the time
Ammonia Nitrogen (µg/L)	2.00	5.00	9.00

As demonstrated in Table F-6 of this Fact Sheet, reasonable potential to exceed applicable WQS for ammonia nitrogen has been determined.

As required by the previous permit, the Permittee collected receiving water data from outside the ZOM from stations 9 through 15 from the surface (1 meter below the surface), middle (mid depth), and bottom (2 meters above bottom) of the water column. As discussed in D.2.c.(3), assimilative capacity is available for ammonia nitrogen in the receiving water. A detailed description of the assimilative capacity evaluation is detailed below:

(1) Review CWA 303(d) list to determine if the water body is impaired for ammonia nitrogen.

The water body is listed in CWA 303(d) list for ammonia nitrogen. However, the Sandy Beach monitoring location is at the shoreline of the beach, adjacent to the parking area and near the restrooms/shower area. The facility's deep ocean outfall diffuser is located northeast of the Sandy Beach monitoring location and starts at approximately 1,400 feet offshore and 46 feet below the surface of the water. Therefore, based on the distance, it was concluded that the Sandy Beach station does not apply to the facility (not representative of the Pacific Ocean near the facility's outfall).

(2) Identify nearby control stations to determine the "decision unit" for analysis.

Control Stations 9 through 15 are the available reference stations and have been identified as the applicable control stations for evaluating assimilative capacity and constitute the decision unit for the analysis.

(3) Data from all seven stations collected from 2013 to 2018 are aggregated as annual geomeans to represent the decision unit. To ensure adequate assimilative capacity, the annual geomeans for the decision unit shall not exceed 90 percent of the applicable WQS.

As discussed in Part D.2.c.(3), the HIP states that if the previous 12 months of receiving water data indicate compliance with water quality criteria, and the background concentrations of the pollutant are decreasing over time, assimilative capacity exists within the receiving water. For ammonia nitrogen, the annual geomean has been decreasing since 2015, and the most recent annual geomean in 2018 is well below the 90 percent value of the WQS for ammonia nitrogen (1.8 µg/L). See table F-5 for the full list of annual geomeans for ammonia nitrogen.

(4) Consider other available information if available, including studies, reports, and receiving water data trends.

As discussed in Part D.2.c.(3), the Permittee conducted a dilution study to determine assimilative capacity for nitrate + nitrite nitrogen, ammonia nitrogen, and total nitrogen. The dilution study and receiving water data trends show that assimilative capacity within the receiving water exists for ammonia nitrogen.

The dilution study submitted with the renewal application found that there is a minimum dilution of 2480:1 at the edge of the ZOM. Effluent limitations are calculated based on the geometric mean and the geometric mean not to exceed more than 2% of the time and the minimum dilution of 2480:1. Based on the applicable WQSs, and a dilution of 2,480:1, an annual geomean effluent limitation of 4,960 µg/L, and a single sample maximum effluent limitation of 22,320 µg/L have been calculated. The previous permit had no annual geomean limitation, and a single sample maximum effluent limitation of 6,660 µg/L, with the latter limit being more stringent than the WQBEL calculated above. There were no exceedances of the ammonia nitrogen WQBEL in the previous permit term, which was calculated using a dilution of 50:1. Therefore, in accordance with anti-backsliding requirements, the permit includes an annual geomean effluent limitation of 4,960 µg/L and an instantaneous maximum effluent limitation of 6,660 µg/L.

Anti-backsliding regulations are satisfied, because the annual geomean effluent limitation was not established in the previous permit, and the proposed single sample maximum effluent limitation is retained from the previous permit. Therefore, these limits are at least as stringent as the limits in the previous permit.

f. Nitrate + Nitrite Nitrogen

HAR Chapter 11-54-6 establishes the following WQS for nitrate + nitrite nitrogen:

Parameter	Geometric Mean	Value not to exceed more than 10% of the time	Value not to exceed more than 2% of the time
Nitrate + Nitrite Nitrogen (µg/L)	3.5	10.00	20.00

As demonstrated in Table F-6 of this Fact Sheet, reasonable potential to exceed applicable WQS for nitrate + nitrite nitrogen has not been determined.

As required by the previous permit, the Permittee collected receiving water data from outside the ZOM from stations 9 through 15 from the surface (1 meter below the surface), middle (mid depth), and bottom (2 meters above bottom) of the water column. As discussed in D.2.c.(3), assimilative capacity is available for nitrate + nitrite nitrogen in the receiving water. A detailed description of the assimilative capacity evaluation is detailed below:

(1) Review EPA's 303(d) list to determine if the water body is impaired for nitrate + nitrite nitrogen.

The water body is listed in EPA's 303(d) list for nitrate + nitrite nitrogen. However, the Sandy Beach monitoring location is at the shoreline of the beach, adjacent to the parking area and near the restrooms/shower area. The facility's deep ocean outfall diffuser is located northeast of the Sandy Beach monitoring location and starts at approximately 1,400 feet offshore and 46 feet below the surface of the water. Therefore, based on the distance, it was concluded that the Sandy Beach station does not apply to the facility (not representative of the Pacific Ocean near the facility's outfall).

(2) Identify nearby control stations to determine the "decision unit" for analysis.

Control Stations 9 through 15 are the available reference stations and have been identified as the applicable control stations for evaluating assimilative capacity and constitute the decision unit for the analysis.

(3) Data from all seven stations collected from 2013 to 2018 are aggregated as annual geomeans to represent the decision unit. To ensure adequate assimilative capacity, the annual geomeans for the decision unit shall not exceed 90 percent of the applicable WQS.

As discussed in Part D.2.c.(3), the HIP states that if the previous 12 months of receiving water data indicate compliance with water quality criteria, and the background concentrations of the pollutant are decreasing over time, assimilative capacity exists within the receiving water. For nitrate + nitrite nitrogen, the annual geomeans from 2013 to 2018 are all well below 90 percent value of the WQS for nitrate + nitrite nitrogen (3.15 µg/L). See table F-5 for the full list of annual geomeans for nitrate + nitrite nitrogen.

(4) Consider other available information if available, including studies, reports, and receiving water data trends.

As discussed in Part D.2.c.(3), the Permittee conducted a dilution study to determine assimilative capacity for nitrate + nitrite nitrogen, ammonia nitrogen, and total nitrogen. The dilution study and receiving water data trends show that assimilative capacity within the receiving water exists for nitrate + nitrite nitrogen.

Since reasonable potential has not been determined for nitrate + nitrite based off of the ZOM receiving water data, the WQBEL for nitrate + nitrite nitrogen has not been retained from the previous permit. It is also DOH's policy to no longer require limits for nitrate + nitrite nitrogen, as the nitrate + nitrite parameter will be controlled by the total nitrogen parameter. Therefore, if reasonable potential were to exist for total nitrogen, limits established for total nitrogen will also limit the nitrate + nitrite parameter.

Anti-backsliding regulations are satisfied, because the RPA based on ZOM receiving water data from November 2014 to December 2018 did not indicate a reasonable potential to cause or contribute to an exceedance of the WQS. The removal of this limit is based on new information and complies with anti-backsliding regulations.

g. Total Nitrogen

HAR Chapter 11-54-6 establishes the following WQS for total nitrogen:

Parameter	Geometric Mean	Value not to exceed more than 10% of the time	Value not to exceed more than 2% of the time
Total Nitrogen (µg/L)	110.00	180.00	250.00

As demonstrated in Table F-6 of this Fact Sheet, reasonable potential to exceed applicable WQS for total nitrogen has not been determined.

As required by the previous permit, the Permittee collected receiving water

data from outside the ZOM from stations 9 through 15 from the surface (1 meter below the surface), middle (mid depth), and bottom (2 meters above bottom) of the water column. As discussed in D.2.c.(3), assimilative capacity is available for total nitrogen in the receiving water. A detailed description of the assimilative capacity evaluation is detailed below:

(1) Review EPA's 303(d) list to determine if the water body is impaired for total nitrogen.

The water body is listed in EPA's 303(d) list for total nitrogen. However, the Sandy Beach monitoring location is at the shoreline of the beach, adjacent to the parking area and near the restrooms/shower area. The facility's deep ocean outfall diffuser is located northeast of the Sandy Beach monitoring location and starts at approximately 1,400 feet offshore and 46 feet below the surface of the water. Therefore, based on the distance, it was concluded that the Sandy Beach station does not apply to the facility (not representative of the Pacific Ocean near the facility's outfall).

(2) Identify nearby control stations to determine the "decision unit" for analysis.

Control Stations 9 through 15 are the available reference stations and have been identified as the applicable control stations for evaluating assimilative capacity and constitute the decision unit for the analysis.

(3) Data from all seven stations collected from 2013 to 2018 are aggregated as annual geomeans to represent the decision unit. To ensure adequate assimilative capacity, the annual geomeans for the decision unit shall not exceed 90 percent of the applicable WQS.

As discussed in Part D.2.c.(3), the HIP states that if the previous 12 months of receiving water data indicate compliance with water quality criteria, and the background concentrations of the pollutant are decreasing over time, assimilative capacity exists within the receiving water. For total nitrogen, the annual geomean value is generally trending down from the highest value in 2013, and the most recent annual geomean in 2018 is below the 90 percent value of the WQS for total nitrogen (99.0 µg/L). While the receiving water data trend shows an upward trend from 2017 to 2018, the 2018 annual geomean (94.01 µg/L) is still below the 90 percent value of the WQS for total nitrogen (99.0 µg/L). See table F-5 for the full list of annual geomeans for total nitrogen.

(4) Consider other available information if available, including studies, reports, and receiving water data trends.

As discussed in Part D.2.c.(3), the Permittee conducted a dilution study to determine assimilative capacity for nitrate + nitrite nitrogen, ammonia nitrogen, and total nitrogen. The dilution study and receiving water data trends show that assimilative capacity exists for total nitrogen.

Since reasonable potential has not been determined for total nitrogen based off of the receiving water data, the WQBEL for total nitrogen has not been retained from the previous permit.

Anti-backsliding regulations are satisfied, because the RPA based on ZOM receiving water data from November 2014 to December 2018 did not indicate a reasonable potential to cause or contribute to an exceedance of the WQS. The removal of this limit is based on new information and complies with anti-backsliding regulations.

h. Total Phosphorous

HAR Chapter 11-54-6 establishes the following WQS for total phosphorous:

Parameter	Geometric Mean	Value not to exceed more than 10% of the time	Value not to exceed more than 2% of the time
Total Phosphorous (µg/L)	16.00	30.00	45.00

As demonstrated in Table F-6 of this Fact Sheet, reasonable potential to exceed applicable WQS for total phosphorous has not been determined.

As required by the previous permit, the Permittee collected receiving water data from outside the ZOM from stations 9 through 15 from the surface (1 meter below the surface), middle (mid depth), and bottom (2 meters above bottom) of the water column. A detailed description of the assimilative capacity evaluation is detailed below:

(1) Review EPA's 303(d) list to determine if the water body is impaired for total phosphorous.

The water body is not listed on EPA's 303(d) list for total phosphorous.

(2) Identify nearby control stations to determine the "decision unit" for analysis.

Control Stations 9 through 15 are the available reference stations and have been identified as the applicable control stations for evaluating assimilative capacity and constitute the decision unit for the analysis.

(3) Data from all seven stations collected from January 2015 to December 2018 are aggregated as annual geomeans to represent the decision unit. To ensure adequate assimilative capacity, the annual geomeans for the decision unit shall not exceed 90 percent of the applicable WQS.

The highest annual geomean calculated was 11.64 µg/L. The 90 percent value of the applicable WQS (16.00 µg/L) is 14.40 µg/L, which is higher than the highest annual geomean. Based on this objective, assimilative capacity appears to be present in the receiving water.

(4) Consider other available information if available, including studies, reports, and receiving water data trends.

Information is not currently known that would result in the removal of assimilative capacity for total phosphorous.

Since reasonable potential has not been determined for total nitrogen based off of the receiving water data, the effluent monitoring reporting requirement has not been retained from the previous permit.

Anti-backsliding regulations are satisfied, because the RPA based on ZOM receiving water data from November 2014 to December 2018 did not indicate a reasonable potential to cause or contribute to an exceedance of the WQS. The removal of the reporting requirement is based on new information and complies with anti-backsliding regulations.

i. pH

The Permittee was previously granted a ZOM for pH. The pH values observed at the edge of the ZOM ranged between 8.04 to 8.38 standard units (s.u.) and are within the WQSs for open coastal waters in as specified in HAR Section 11-54-6(b)(3). Thus, the technology-based effluent limitations of between 6.0 to 9.0 at all times appears to be protective of water quality outside the ZOM and has been retained.

j. Oil and Grease

HAR Section 11-54-4(a)(2), establishes a narrative water quality objective that all waters shall be free of substances attributable to domestic, industrial, or other controllable sources of pollutants, including oil and grease. Oil and grease are pollutants commonly found in the effluent from wastewater treatment plants serving municipalities. Therefore, monitoring for oil and grease has been retained in this permit to ensure compliance with this narrative water quality criteria.

k. Enterococcus

The discharge consists of treated sewage which may contain pathogens at elevated concentrations if not properly disinfected, sufficient to impact human health of the beneficial uses of the receiving water. To ensure the protection of human health, this permit establishes effluent limitations for enterococcus.

HAR Section 11-54-8 establishes recreational water quality criteria for all State waters. HAR Section 11-54-8 establishes the applicable geometric mean as 35 CFU/100mL (Colony Forming Units per 100 milliliters) and the applicable single sample maximum criteria as 130 CFU/100mL.

Receiving water data from November 2014 through December 2018 indicate that there were no exceedances of enterococcus at any of the receiving water monitoring locations, which are located at the outfall and at points 1,000 and 2,000 feet west of the outfall, which indicates that assimilative capacity does exist for enterococcus within the receiving water. Thus, dilution should be granted for enterococcus. Consistent with Section 3.3 of EPA's TSD, the regulatory authority should consider additional information discussed under Section 3.2 (i.e., type of industry, type of POTW, type of receiving water and designated uses, etc.) when evaluating reasonable potential. Reasonable potential can be determined without effluent or receiving water exceedances of applicable water quality criteria. Because the facility is a domestic WWTP, and pathogens are characteristic of treated municipal wastewater, and the beneficial uses of the receiving water include recreation where human contact may occur, reasonable potential for enterococcus has been determined.

The permit calculates the following end-of-pipe effluent limitations and monitoring requirements for enterococcus at Outfall Serial No. 001 based on HAR Section 11-54-8 and dilutions discussed below. Human contact within the zone of mixing may occur, thus for the protection of human health due to the potential for acute illness from pathogens, the minimum initial dilution of 50:1 was used to calculate applicable WQBELs for enterococcus.

(1) Due to the potential for human contact within the receiving water, a geometric mean effluent limitation of 1,750 CFU per 100 mL has been calculated based on the geometric mean of 35 CFU per 100 mL and a dilution of 50:1. The previous permit established a monthly geometric mean effluent limitation for enterococcus of 175 CFU per 100 mL based on the WQS of 7 CFU per 100 mL from HAR Section 11-54-8 (which has been revised and is currently 35 CFU per 100 mL), a dilution of 50:1 and a safety factor of 2, which is more stringent than the WQBELs calculated above. Therefore, in accordance with

anti-backsliding requirements at CWA 402(o) and 40 CFR 122.44(l), the permit includes a monthly geometric mean effluent limitation for enterococcus of 175 CFU per 100 mL. Based on effluent data from November 2014 through December 2018, the maximum reported effluent geometric mean enterococcus concentration was 25 CFU per 100 mL. Therefore, the Permittee is expected to be able to comply with the effluent limitation.

(2) Considering the applicable single sample maximum of 130 CFU per 100 mL and a dilution of 50:1, a single sample maximum effluent limitation of 6,500 CFU per 100 mL has been calculated. The previous permit established a single sample maximum for enterococcus of 5,200 CFU per 100 mL, based on the WQS of 104 CFU per 100 mL from 40 CFR 131.41(c)(2) (from 40 CFR 131.41(c)(2), which is no longer applicable due to revisions to HAR 11-54-8) and a dilution of 50:1, which is more stringent than the WQBELs calculated above. Therefore, in accordance with anti-backsliding requirements at CWA 402(o) and 40 CFR 122.44(l), the permit includes a single sample maximum limitation for enterococcus of 5,200 CFU per 100 mL. Based on effluent data from November 2014 through December 2018, the maximum single sample maximum concentration was >200 CFU per 100 mL. Therefore, the Permittee is expected to be able to comply with the effluent limitation.

l. Storm Water – Outfall Serial No. 002

The storm water discharges from the facility are subject to the *Storm Water Discharges Associated with Industrial Activity* NPDES requirements under 40 CFR Section 122.26(b)(14)(ix). Accordingly, the proposed storm water runoff discharge conditions and requirements are incorporated in the permit based on the draft HAR Chapter 11-55, Appendix B, Multi-Sector General Permit (draft Hawaii MSGP).

The draft Hawaii MSGP follows the objectives of the EPA's 2015 MSGP by establishing requirements based on a facility's industrial sector. The draft Hawaii MSGP includes general requirements applicable to all facilities, additional sector-specific control measures and monitoring requirements, and additional monitoring for storm water discharges into impaired water bodies, as listed in the 2018 CWA 303(d) List of Impaired Water Bodies in the State of Hawaii. In accordance with the draft Hawaii MSGP, the permit includes the general requirements for all facilities, sector-specific requirements, and monitoring for parameters for which the receiving water is impaired. The site-specific requirements for Sector T, Treatment Works (as defined in Appendix 2 of the permit) includes

additional technology-based effluent limits in the form of control measures, employee training, additional SWPPP requirements, and additional inspection requirements.

Based on the requirements for receiving water impairments, the permit requires monitoring for total nitrogen, ammonia nitrogen, turbidity and Total Suspended Solids (TSS). The draft Hawaii MSGP states that when the pollutant of concern for an impaired waterbody is suspended solids, turbidity, or sediment/sedimentation, you must monitor for Total Suspended Solids, therefore, monitoring for TSS is established as the waterbody is impaired for turbidity. Monitoring for nitrate + nitrite nitrogen has not been established, as this parameter is controlled by the total nitrogen parameter. Monitoring for chlorophyll a is also not established as this parameter is reflective of a response condition and not reflective of long-term impacts.

Numeric effluent limitations were removed in accordance with the draft Hawaii MSGP. There are no benchmark parameters or effluent limitations for treatment works, and there have been no storm water exceedances reported during the previous permit term. Based on this, the DOH has determined that the permit will not establish benchmark parameters.

m. Whole Effluent Toxicity (WET)

WET limitations protect receiving water quality from the aggregated toxic effect of a mixture of pollutants in an effluent. WET tests measure the degree of response of exposed aquatic test organisms to an effluent or receiving water. The WET approach allows for protection of the narrative criterion specified in HAR Chapter 11-54-4(b)(2), while implementing Hawaii's numeric WQS for toxicity. There are two (2) types of WET tests – acute and chronic. An acute toxicity test is conducted over a short period of time and measures mortality. A chronic toxicity test is generally conducted over a longer period of time and may measure mortality, reproduction, or growth.

The previous permit established a chronic WET effluent limitation at Outfall Serial No. 001 for *Tripneustes gratilla*.

Whole effluent toxicity data for the time period between 2014 and 2018 indicated that the discharge "Passes" the WET test, as all WET tests reported "Pass."

In accordance with anti-backsliding requirements at CWA 402(o) and 40 CFR 122.44(l), the permit retains the chronic WET effluent limitation at Outfall Serial No. 001 from the previous permit. For WET analysis, DOH implements EPA's Test of Significant Toxicity Method (TST) for WET

effluent limitations within the State. As such, the chronic WET effluent limitation at Outfall Serial No. 001 uses the TST method using *T. gratilla*. *T. gratilla* is a native species to Hawaii. The use of *T. gratilla* is representative of toxic impacts on local species.

Test procedures for measuring toxicity to marine organisms of the Pacific Ocean, including *T. gratilla*, are not provided at 40 CFR Part 136. Consistent with the Preamble to EPA's 2002 Final WET Rule, permit writers may include (under 40 CFR 122.41(j)(4) and 122.44(i)(iv)) requirements for the use of test procedures that are not approved at 40 CFR Part 136 on a permit-by-permit basis. The use of alternative methods for West coast facilities in Hawaii is further supported under 40 CFR 122.21(j)(5)(viii), which states, "West coast facilities in…,Hawaii,… are exempted from 40 CFR [P]art 136 chronic methods and must use alternative guidance as directed by the permitting authority."

EPA has issued applicable guidance for conducting chronic toxicity tests using *T. gratilla* in *Hawaiian Collector Urchin, Tripneustes gratilla* (Hawa'e) *Fertilization Test Method* (Adapted by Amy Wagner, EPA Region 9 Laboratory, Richmond, CA from a method developed by George Morrison, EPA, ORD Narragansett, RI and Diane Nacci, Science Applications International Corporation, ORD Narragansett, RI) (EPA/600/R-12/022).

As previously discussed, with anti-backsliding requirements at CWA 402(o) and 40 CFR 122.44(I), the permit retains the chronic WET effluent limitation at Outfall Serial No. 001 from the previous permit. Further, a WET effluent limitation and monitoring are necessary to ensure compliance with applicable WQS in HAR Chapter 11-54-4(b)(2). The proposed WET limitation and monitoring requirements are incorporated into the permit in accordance with the EPA national policy on water quality-based permit limitations for toxic pollutants issued on March 9, 1984 (49 FR 9016), HAR Section 11-54-4(b)(2)(B), and EPA's National Pollutant Discharge Elimination System Test of Significant Toxicity Implementation Document (EPA 833-R-10-003, 2010).

Consistent with HAR Chapter 11-54-4(c)(2)(B), this permit establishes a chronic toxicity effluent limitation based on the TST hypothesis testing approach. The TST approach was designed to statistically compare a test species response to the in-stream waste concentration (IWC) and a control.

For continuous discharges through submerged outfalls, HAR 11-54-4(c)(4)(A) requires the no observed effect concentration (NOEC), expressed as a percent of effluent concentration, to not be less than 100 divided by the minimum dilution. Thus, the minimum dilution of 50:1 is most appropriate for establishing a critical dilution factor. The

following equation is used to calculate the IWC where dilution is granted (Outfall Serial No. 001):

IWC = 100/critical dilution factor
= 100/50
= 2%

For any one chronic toxicity test, the chronic WET permit limit that must be met is rejection of the null hypothesis (Ho):

IWC (2 percent effluent) mean response ≤ 0.75 x Control mean response.

A test result that rejects this null hypothesis is reported as “Pass.” A test result that does not reject this hypothesis is reported as “Fail.”

The acute and chronic biological effect levels (b values of 20% and 25%, respectively) incorporated into the TST define EPA’s unacceptable risks to aquatic organisms and substantially decrease the uncertainties associated with the results obtained from EPA’s traditionally used statistical endpoints for WET. Furthermore, the TST reduces the need for multiple test concentrations which, in turn, reduces laboratory costs for dischargers while improving data interpretation. A significant improvement offered by the TST approach over traditional hypothesis testing is the inclusion of an acceptable false negative rate. While calculating a range of percent minimum significant differences (PMSDs) provides an indirect measure of power for the traditional hypothesis testing approach, setting appropriate levels for β and α using the TST approach establishes explicit test power and provides motivation to decrease within test variability which significantly reduces the risk of under reporting toxic events (USEPA 2010[1]).

Taken together, these refinements simplify toxicity analyses, provide dischargers with the positive incentive to generate high quality data, and afford effective protection to aquatic life.

A WET effluent limitation based on the TST hypothesis testing approach is protective of the WQS for toxicity contained in HAR Section 11-54-4(c)(4)(A) and is not considered to be less stringent. Use of the TST approach is consistent with the requirements of State and Federal anti-backsliding regulations.

[1] U.S. Environmental Protection Agency. 2002a. Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms (5th Edition). EPA 821-R-02-012. Washington, DC: Office of Water.

n. Summary of Final Effluent Limitations

In addition to the effluent limitations specified above, HAR Section 11-55-20 requires that daily quantitative limitations by weight be established where possible. Thus, in addition to concentration based-effluent limitations, mass-based effluent limitations (in pounds per day) have been established where applicable based on the following formula:

lbs/day = 8.34 x Concentration (mg/L) x Flow (MGD)

40 CFR 122.45(b)(1) requires that mass-based effluent limitations for POTWs be based on design flow. The previous permit established mass-based effluent limitations for BOD and TSS based on a flow of 3.9 MGD, although the design flow is 5.2 MGD. All other previously established mass-based effluent limitations are based on a flow of 5.2 MGD. Annual average effluent flows from the renewal application show 3.9 MGD appears to remain representative of current operations. Further, establishing mass-based effluent limitations on flows greater than 3.9 MGD for parameters previously limited with mass-based limitations would require an anti-degradation analysis and constitute backsliding. An anti-degradation analysis was not provided by the Permittee for an increase in flow. This permit continues to include mass-based effluent limitations using a flow of 3.9 MGD for parameters which previously had mass-based effluent limitations. However, since previous permits did not include discharge limitations for beryllium and copper, and did not include an annual geometric mean limit for ammonia nitrogen, the current design flow of 5.2 MGD was used for the calculation of the mass-based effluent limitations for these parameters and is consistent with applicable State and Federal antidegradation requirements. The following table lists final effluent limitations contained in the permit and compares them to effluent limitations contained in the previous permit.

Table F-7. Summary of Final Effluent Limitations for Outfall Serial No. 001 – BOD and TSS

Parameter	Units	Effluent Limitations Contained in the Previous Permit			Proposed Effluent Limitations		
		Average Monthly	Average Weekly	Maximum Daily	Average Monthly	Average Weekly	Maximum Daily
Biochemical Oxygen Demand (5-Day)	mg/L	30	45	90	30	45	90
	lbs/day[1]	976	1,464	2,927	976	1,464	2,927
	% Removal	The average monthly percent removal shall not be less than 85 percent			The average monthly percent removal shall not be less than 85 percent		
Total Suspended Solids (TSS)	mg/L	30	45	90	30	45	90
	lbs/day[1]	976	1,464	2,927	976	1,464	2,927

[1] Based on a design flow of 3.9 MGD.

Table F-8. Summary of Final Effluent Limitations for Outfall Serial No. 001 – Nutrients

Parameter	Units	Effluent Limitations Contained in the Previous Permit		Proposed Effluent Limitations	
		Geometric Mean[1]	Single Sample Maximum	Geometric Mean[1]	Single Sample Maximum
Ammonia Nitrogen	µg/L	--	6,660	4,960	6,660
	lbs/day[2]	--	289	215	289
Nitrate + Nitrite Nitrogen	µg/L	--	10,300	--	--
	lbs/day[2]	--	447	--	--
Total Nitrogen	µg/L	--	13,100	--	--
	lbs/day[2]	--	568	--	--
Total Phosphorous	µg/L	--	[3]	--	--
	lbs/day[2]	--	[3]	--	--

[1] To be evaluated on a calendar year.
[2] Based on a design flow of 5.2 MGD.
[3] The Permittee shall monitor and report the results.

Table F-9. Summary of Final Effluent Limitations for Outfall Serial No. 001 – Other Pollutants

Parameter	Units	Effluent Limitations Contained in the Previous Permit			Proposed Effluent Limitations		
		Average Annual	Average Monthly	Maximum Daily	Average Annual	Average Monthly	Maximum Daily
Enterococci	CFU/100 mL	--	175[1]	5,200[2]	--	175[1]	5,200[2]
pH	s.u.	Not less than 6.0 and not greater than 9.0			Not less than 6.0 and not greater than 9.0		
Chronic Toxicity – *Tripneustes Gratilla*	Pass/Fail	--	--	Pass[4]	--	--	Pass[4]
Cyanide, Total (as CN)	µg/L	--	--	50	--	--	50
	lbs/day[3]	--	--	2.2	--	--	2.2
Beryllium, Total Recoverable	µg/L	--	--	--	1.9	--	--
	lbs/day[3]	--	--	--	0.08	--	--
Copper, Total Recoverable	µg/L	--	--	--	--	--	174.6
	lbs/day[3]	--	--	--	--	--	7.5

[1] Effluent limitation expressed as a monthly geometric mean.
[2] Effluent limitation expressed as a single sample maximum.
[3] Based on a design flow of 5.2 MGD.
[4] "Pass," as described in section D.2.m of this Fact Sheet.

o. Satisfaction of Anti-Backsliding Requirements

The CWA specifies that a revised permit may not include effluent limitations that are less stringent than the previous permit unless a less stringent limitation is justified based on exceptions to the anti-backsliding

provisions contained in CWA Sections 402(o) or 303(d)(4), or, where applicable, 40 CFR 122.44(l).

Effluent limitations and requirements for pollutants are at least as stringent as those in the current permit and are consistent with State and Federal anti-backsliding regulations or are justified based on exceptions to the anti-backsliding provisions contained in CWA Sections 402(o) or 303(d)(4), or, where applicable, 40 CFR 122.44(l).

p. Satisfaction of Antidegradation Policy Requirements

The DOH established the State antidegradation policy in HAR Section 11-54-1.1 which incorporates the federal antidegradation policy at 40 CFR 131.12. HAR Section 11-54-1.1 requires that the existing quality of waters be maintained unless degradation is justified based on specific findings demonstrating that allowing lower water quality is necessary to accommodate economic or social development in the area in which the waters are located. All effluent limitations and requirements of the current permit are retained in the permit. Therefore, the permitted discharge is consistent with antidegradation provisions of 40 CFR 131.12 and HAR Section 11-54-1.1. The impact on existing water quality will be insignificant and the level of water quality necessary to protect the existing uses will be maintained and protected.

E. Rationale for Receiving Water and Zone of Mixing Requirements

1. Summary of ZOM Water Quality Standards and Monitoring Data

The following are ZOM receiving water quality monitoring results for HAR Chapter 11-54 specific water quality criteria parameters that were provided in the renewal application and receiving water data submitted to the DOH, and applicable ZOM water quality criteria from 11-54-6(b)(3)

Table F-10. ZOM Monitoring Data

Parameter	Units	Applicable WQS	Maximum Reported Concentration[1]
Nitrate + Nitrite Nitrogen	µg/L	3.50[2]	1.32
Ammonia Nitrogen	µg/L	2.00[2]	2.55
Total Phosphorous	µg/L	16.00[2]	12.15
Total Nitrogen	µg/L	110.00[2]	103.72
Turbidity	NTU	0.20[2]	0.11
Salinity	ppt	[3]	34.8 – 35.1[7]
pH	s.u.	[4]	8.15 – 8.25[7]
Chlorophyll a	µg/L	0.15[2]	0.28
Temperature	°C	[5]	25.16 – 26.55[7]
Dissolved Oxygen	%	[6]	99.1[8]

[1] Source: ZOM monitoring data from renewal application. Calculated as an annual geometric mean across the ZOM monitoring stations (i.e., Stations 1,2,3,4,7, and 8).
[2] WQS expressed as a geometric mean.
[3] Shall not vary more than 10 percent from natural or seasonal changes considering hydrologic input and oceanographic factors.
[4] Shall not deviate more than 0.5 units from 8.1, except at coastal locations where and when freshwater from stream, storm drain or groundwater discharge may depress the pH to a minimum level of 7.0.
[5] Shall not vary more than 1°C from ambient conditions.
[6] Shall not be less than 75 percent saturation, determined as a function of ambient water temperature and salinity.
[7] Minimum and maximum values.
[8] Minimum saturation value.

2. Existing Receiving Water Limitations and Monitoring Data

a. Shoreline Stations
The following are a summary of the geometric mean values calculated at each shoreline monitoring location, reported in the monthly DMRs from November 2014 through December 2018.

Table F-11. Shoreline Monitoring Stations

Station	Geometric Mean[1] Enterococcus[2] CFU/100 mL
1	6.7
2	4.7
3	7.6
Applicable WQS	35

[1] Source: Monthly DMRs submitted by the Permittee from November 2014 to December 2018.
[2] Reported geometric mean is the maximum monthly geometric mean reported at each monitoring station.

3. Proposed Receiving Water Limitations

a. Basic Water Quality Criteria Applicable to the Facility

(1) The discharge shall not cause a violation of any applicable WQS for receiving waters adopted by the DOH, as required by the Water Quality Act of 1987 (P.L. 100-4) and regulations adopted thereunder. The DOH adopted WQSs specific for open coastal waters in HAR Chapter 11-54. The permit incorporates receiving water limitations and requirements to ensure the facility does not exceed applicable WQSs.

(2) The Pacific Ocean off of Sandy Beach is designated as “Class A Dry Open Coastal Waters.” As such, the discharge from the facility shall not interfere with the attainment or maintenance of that water quality which assures protection of public water supplies and the protection

and propagation of a balanced indigenous population of shellfish, fish, and wildlife and allows recreational activities in and on the water. The permit incorporates receiving water limitations for the protection of the beneficial uses of the Pacific Ocean.

The Permittee is required to comply with the HAR Chapter 11-54, Basic Water Quality Criteria of which has been incorporated as part of the permit under Section 1 of the DOH Standard NPDES Permit Conditions, version 15.

(3) The following recreational criteria are included in HAR Section 11-54-8 for all State waters:

(a) Enterococcus content shall not exceed a geometric mean of 35 colony forming units per one hundred milliliters over any thirty-day interval.

Based on the State Enterococcus standard at the time of reissuance, the previous permit included a geometric mean of 35 CFU per

100 mL and a single sample maximum value of 104 CFU per 100 mL for marine recreational waters within 300 meters (1,000 feet) of the shoreline. However, as explained by the DOH in *Hawaii Administrative Rules, Title 11, Chapter 54, Rationale* (for HAR 11-54 effective November 15, 2014), a revision was made to the standards to be consistent with EPA's 2012 Recreational Water Quality Criteria (RWQC) recommendations (DPA-820-F-12-061, December 2012) for protecting human health in all coastal and non-coastal waters. In the rationale, the DOH recommended that the State enterococcus WQS be revised to a geometric mean of 35 CFU per 100 mL and a Statistical Threshold Value (STV) of 130 CFU per 100 mL to be consistent with EPA's 2012 recommendations. The new standards were adopted by the DOH on November 15, 2014 and approved by the EPA on May 20, 2015. The permit established the new enterococcus standards from HAR Section 11-54-8 for all State waters. Since the new WQSs were adopted by the DOH and EPA for all State waters, DOH has determined that the impact the new WQSs established in the permit will be insignificant and the level of water quality necessary to protect the existing uses will be maintained and protected.

(b) A Statistical Threshold Value (STV) of 130 per one hundred milliliters shall be used for enterococcus. The STV shall not be exceeded by more than ten percent of samples taken within the same thirty-day interval in which the geometric mean is calculated.

(c) State waters in which enterococcus content does not exceed the standard shall not be lowered in quality.

(d) Raw or inadequately treated sewage, sewage for which the degree

of treatment is unknown, or other pollutants of public health significance, as determined by the director of health, shall not be present in natural public swimming, bathing or wading areas. Warning signs shall be posted at locations where human sewage has been identified as temporarily contributing to the enterococcus count.

The permit establishes these recreational criteria for all State waters, as described in Part C of the permit, to be consistent with HAR Section 11-54-8.

b. Zone of Mixing (ZOM)

HAR Chapter 11-54 allows for a ZOM, which is a limited area around outfalls to allow for initial dilution of waste discharges, provided the ZOM is in compliance with requirements in HAR Section 11-54-9(c). The Permittee has requested that the existing ZOM for the assimilation of treated wastewater be retained. Consistent with the previous permits, the ZOM requested is a rectangle with dimensions of 1,500 feet parallel to the

shoreline on each side of the present outfall diffuser, 1,000 feet seaward, and 500 feet shoreward of the diffuser.

(1) Prior to the renewal of a ZOM, the environmental impacts, protected uses of the receiving water, existing natural conditions, character of the effluent, and the adequacy of the design of the outfall must be considered. The following findings were considered:

(a) The Permittee's ZOM application indicates that the existing physical environment is a class II reef flat.

(b) The diffuser for Outfall Serial No. 001 reportedly provides a minimum of 50:1 dilution and discharges approximately 1,400 feet offshore. No information provided in the ZOM application indicates that dilution would be negatively impacted by current conditions.

(c) The Permittee completed a dilution study during the past permit term to determine the average dilution at the edge of the ZOM, and to also verify the presence or absence of assimilative capacity for nutrients with reasonable potential. The dilution study found that there is a minimum average dilution of 2,480:1 at the edge of the ZOM, and that assimilative capacity exists for nitrate + nitrite nitrogen, ammonia nitrogen, and total nitrogen.

(d) Receiving water data are provided in Tables F-10 and F-11 of this Fact Sheet. Biological monitoring of the facility's diffuser found no evidence of negative impacts to fish populations due to the diffuser.

(2) HAR 11-54-9(c)(5) prohibits the establishment of a ZOM unless the application and supporting information clearly show: that the continuation of the ZOM is in the public interest; the discharge does not substantially endanger human health or safety; compliance with the WQS would produce serious hardships without equal or greater benefits to the public; and the discharge does not violate the basic standards applicable to all waters, will not unreasonably interfere with actual or probable use of water areas for which it is classified, and has received the best degree of treatment or control. The following findings were made in consideration of HAR 11-54-9(c)(5):

(a) The facility treats domestic wastewater for approximately 33,000 people in the Hawaii Kai and Koliouou-Paiko communities and is a necessity for public health. There are no other treatment facilities currently servicing this area and a cessation of function or operation would cause severe hardship to the residents.

(b) The level of treatment of the discharge and the depth and distance of the outfall offshore does not substantially endanger human health or safety. A review of the shoreline enterococcus bacteria data does not indicate exceedances of the applicable WQS for enterococcus.

(c) The feasibility and costs to install treatment necessary to meet applicable WQS end-of-pipe, or additional supporting information, were not provided by the Permittee to demonstrate potential hardships. As discussed in Part E.3.c.(2)(a), the operation of the facility has been found to benefit the public. No information is known that would revise the finding during the previous permit term

that compliance with the applicable WQS without a ZOM would produce serious hardships without equal or greater benefits to the public.

(d) As discussed in Part D.2.c.(5)(c) of this Fact Sheet, effluent data indicates the presence of pollutants in excess of applicable WQS. However, this permit establishes WQBELs based on WQS. The Permit requires compliance with the effluent limitations and conditions which are protective of the actual and probable uses of the receiving water and implement applicable technology-based effluent limitations.

The DOH has determined that the ZOM satisfies the requirements in HAR Section 11-54-09(c)(5).

The establishment of the ZOM is subject to the conditions specified in Part D of the permit. The permit incorporates receiving water monitoring requirements which the DOH has determined are necessary to evaluate compliance of the Outfall Serial No. 001 discharges with the applicable water quality criteria, as described further in section F.4 of this Fact Sheet.

F. Rationale for Monitoring and Reporting Requirements

40 CFR 122.41(j) specifies monitoring requirements applicable to all NPDES permits. HAR Section 11-55-28 establishes monitoring requirements applicable to NPDES permits within the State of Hawaii. 40 CFR 122.48 and HAR Section 11-55-28 require that all NPDES permits specify requirements for recording and reporting monitoring results. The principal purposes of a monitoring program are to:

- Document compliance with waste discharge requirements and prohibitions established by the DOH;
- Facilitate self-policing by the Permittee in the prevention and abatement of pollution arising from waste discharge;
- Develop or assist in the development of limitations, discharge prohibitions, national standards of performance, pretreatment and toxicity standards, and other standards; and
- Prepare water and wastewater quality inventories.

The permit establishes monitoring and reporting requirements to implement Federal and State requirements. The following provides the rationale for the monitoring and reporting requirements contained in the permit.

1. Influent Monitoring

   Influent monitoring is required to assess the performance of treatment facilities, and to evaluate compliance with effluent limitations. Influent monitoring requirements for BOD_5, TSS, and flow have been retained from the previous permit. The proposed influent water monitoring requirements are specified in Part A.1 of the permit.

2. Effluent Monitoring

   a. Outfall Serial No. 001

      The following monitoring requirements are applicable at Outfall Serial No. 001.

      (1) Monitoring requirements for ammonia nitrogen and turbidity are retained from the previous permit to determine compliance with effluent limitations, where applicable, and to enable comparison with the receiving water ZOM monitoring results to determine if the facility effluent is contributing to elevated concentrations of said pollutants.

      (2) Monitoring requirements for temperature have been retained from the previous permit to enable comparison with the receiving water ZOM monitoring results to determine if the facility effluent is contributing to elevated temperatures.

      (3) Monitoring requirements for flow have been retained from the previous permit to calculate pollutant loading and to determine compliance with mass-based effluent limitations.

      (4) Monitoring requirements for pH, BOD_5, enterococcus, and TSS have been retained from the previous permit in order to determine compliance with effluent limitations and to collect data for future RPAs.

      (5) Monitoring requirements for cyanide have been retained from the previous permit, and monitoring requirements for beryllium and copper have been added to the permit to determine compliance with effluent limitations, and to collect data for future RPAs.

   b. Outfall Serial No. 002

      The monitoring requirements for storm water have been revised in accordance with requirements in Appendix 2 of the permit

3. Whole Effluent Toxicity Monitoring

   Consistent with the previous permit, semi-annual whole effluent toxicity testing is required in order to determine compliance with whole-effluent toxicity effluent limitations as specified in Parts A.1 and B of the permit.

4. Receiving Water Quality Monitoring Requirements

   a. Shoreline Water Quality Monitoring

      Shoreline water quality monitoring for enterococcus is used to assess compliance with water quality criteria specific for marine recreational

waters as described in Part C of the permit. The Permittee shall monitor at three shoreline stations with a frequency of five times per month in order to calculate a geometric mean. These monitoring requirements are retained from the previous permit and included in Part E.1 of the permit.

b. Offshore Water Quality Monitoring

Offshore water quality monitoring is required to assess compliance with State WQSs, as described in Part D of the permit. The permit requires the Permittee to monitor offshore waters at two stations within the ZOM, six stations along the boundary of the ZOM, and seven control stations outside the ZOM. As stated in the HIP monitoring for nitrate + nitrite nitrogen is not required, as the nitrate + nitrite nitrogen parameter will be controlled by the total nitrogen parameter. Monitoring for chlorophyll a is also not established as this parameter is reflective of a response condition and not reflective of long-term impacts. All other monitoring requirements for all offshore stations have been retained from the previous permit.

c. Benthic Monitoring

Benthic monitoring is retained from the previous permit to detect spatial and temporal trends in benthic organisms. The permit requires the Permittee to continue to perform benthic monitoring at the three stations identified in Part E.3 of the permit.

d. Ocean Outfall Monitoring

At least once during the term of this permit, the Permittee shall inspect the ocean outfall and submit the investigation findings to the Director. The outfall inspection shall include, but not be limited to, an investigation of the structural integrity, operational status, and maintenance needs. The Permittee shall include findings of the inspection to the Director in the annual wastewater pollution prevention report in Part F of the permit for the year the outfall inspection is conducted. This requirement is retained from the previous permit.

G. Rationale for Provisions

1. Standard Provisions
The Permittee is required to comply with DOH Standard NPDES Permit Conditions (Version 15), which are accessible from: http://health.hawaii.gov/cwb/site-map/home/standard-npdes-permit-conditions/.

2. Monitoring and Reporting Requirements

   The Permittee shall comply with all monitoring and reporting requirements included in the permit and in the DOH Standard NPDES Permit Conditions (Version 15).

3. Special Provisions

   a. Reopener Provisions

      The permit may be modified in accordance with the requirements set forth at 40 CFR 122 and 124, to include appropriate conditions or limitations based on newly available information, or to implement any new State water quality criteria that are approved by the EPA.

   b. Special Studies and Additional Monitoring Requirements

      (1) **Toxicity Reduction Requirement.** The permit requires the Permittee to submit an initial investigation Toxicity Reduction Evaluation (TRE) workplan to the Director and EPA which shall describe steps which the Permittee intends to follow in the event that toxicity is detected. This requirement is retained from the previous permit and is discussed in detail in Part B.5 of the permit.

4. Special Provisions for Municipal Facilities

   a. Biosolids Requirements

      The use and disposal of biosolids is regulated under Federal laws and regulations, including permitting requirements and technical standards included in 40 CFR 503, 257, and 258. The biosolids requirements in the permit are in accordance with 40 CFR 257, 258, and 503, are based on the previous permit and are consistent with NPDES permits issued to other Hawaii POTWs.

5. Other Special Provisions

   a. **Wastewater Pollution Prevention Program.** The permit requires the Permittee to submit a wastewater pollution control plan by March 31 each year. This provision is retained from the previous permit and is required to allow DOH to ensure that the Permittee is operating correctly and attaining maximum treatment of pollutants discharged by considering all aspects of the wastewater treatment system. This provision is included in Part F of the permit.

   b. Wastewater treatment facilities subject to the permit shall be supervised and operated by persons possessing certificates of appropriate grade, as determined by the DOH. If such personnel are not available to staff the

wastewater treatment facilities, a program to promote such certification shall be developed and enacted by the Permittee. This provision is included in the permit to assure that the facility is being operated correctly by personnel trained in proper operation and maintenance and is included in Part I.1 of the permit.

c. The Permittee shall maintain in good working order a sufficient alternate power source for operating the wastewater treatment and disposal facilities. This provision is retained from the previous permit in order to ensure that if a power failure occurs, the facility is well equipped to maintain treatment operations until power resumes. If an alternate power source is not in existence, the permit requires the Permittee to halt, reduce, or otherwise control all discharges upon the reduction, loss, or failure of the primary source of power. This provision is included in Part I.2 of the permit.

d. **Storm Water Pollution Prevention Plan (SWPPP).** The proposed storm water runoff conditions and requirements are incorporated into the permit based on the draft HAR Chapter 11-55, Appendix B, Multi-Sector General Permit (draft Hawaii MSGP). Accordingly, the Permittee shall continue to implement the Storm Water Pollution Control Plan dated April 30, 1998, or more recent version, until the Permittee develops and submits to the DOH an updated SWPPP, in accordance with Appendix 2 of the permit. The Permittee shall update and implement the SWPPP as specified by the schedule in Part A.2.e of the permit.

e. **Response to Sewage Spill.** The permit requires the Permittee to properly clean up any spill and provide public warnings and limited public access to areas affected by the spill. This provision is retained from the previous permit to ensure that spills are properly cleaned up and do not endanger the public.

H. Public Participation

A public notice of the proposed permit was published in the ***Honolulu Star-Advertiser*** on April 23, 2020 soliciting public comment on the proposed action for a 30-day period. The permit application, applicable documents, proposed permit and rationale were available for public review at the CWB office and on the CWB website.